

February 19, 1996
ILR 96-C

Representative Raymond Short
House of Representatives
State Capitol Building
Salt lake City, UT 84114

Subject: **Division of Facilities Construction and Management Issues**

Dear Representative Short:

In response to your request, we have completed our review of certain issues pertaining to the Division of Facilities Construction and Management (DFCM). Specifically, we were asked to determine if DFCM is appropriately controlling change orders. We were also asked to determine if DFCM exercised appropriate oversight over the planning and design of the Youth Corrections facility currently under construction in Salt Lake County. And lastly, we examined the awarding of an architectural contract to determine its appropriateness.

In our opinion, DFCM management needs to do more to adequately control change orders. Our review found that cost savings could be obtained through proper review and control of change orders. For one particular facility, we found that DFCM paid approximately \$150,000 for design errors, omissions and scope changes that were mostly the architect's fault and should have been deducted from the architect's fee. In addition, it appears that the contractor may have overcharged the state on a particular change order which DFCM approved without question or review. We believe that DFCM on this particular project alone, could have saved the state as much as \$150,000 had change orders been controlled adequately.

A 1992 performance audit conducted by our office made DFCM aware of the need for better controls over change orders. The audit listed examples where DFCM paid contractors for work due to errors and omissions that were clearly the architect's fault. It also listed examples where contractors had overcharged the state for change order work done during the course of the project. The audit recommended that DFCM hire an additional staff person to review requests for change orders to determine if the state should pay them and if labor costs were reasonable. Although a person was assigned to review change orders for a time, this person has now been

reassigned and no longer reviews change orders. In our opinion, DFCM management has failed to take action on the recommendations from our last report regarding proper change order review.

In addition, our review of the Salt Lake Youth Correctional project found that while DFCM exercised appropriate oversight over the planning process, further review may have resulted in cost savings. During the 1994 session, the Legislature funded a study conducted by the private sector which attempted to explore more efficient and economical ways to build youth correction facilities. DFCM used the study to put together a proposal which allowed the private sector to bid on both the design and construction of the facility together. In comparison to conventional built facilities in other states, Utah's youth facility appears to be fairly efficient in terms of cost per bed. However, we believe that DFCM failed to explore all options pertaining to construction methods which may have cost the state in dollars saved. In our opinion, DFCM failed to recognize or suggest alternative design approaches, such as prefabrication, which according to manufactures' report could have saved the state as much as 25 percent of the project's costs while still meeting all safety and security issues. In addition, it is reported that construction time could be reduced by 20 percent. All this equates to what we believe could have been substantial savings and may mean future savings on all other correctional facilities built.

DFCM Needs More Control Over Change Orders

We were asked to determine if DFCM management had adequately controlled change orders on two particular buildings, the Box Elder County Court Complex and the Prison Early Release Facility. Our review found that both buildings appeared to have a fairly high amount of change orders compared to the total cost of the facilities. The Box Elder Court facility, which had an original contract amount of \$3.3 million, had approximately 12 percent or \$400,000 in change orders. The Prison Early Release Facility, with an original contract of approximately \$5.8 million had nearly 11 percent or \$700,000 in change orders. However, much of that was considered to be added value items. DFCM defines added value as an item left off the original architectural drawings, which is then later added to the building through change orders. In both cases, the percent of change orders were considered high compared to DFCM's standard of 3 percent. In the following sections we will discuss the two facilities in more detail.

Box Elder Courts Complex

In our opinion, the Box Elder Courts Facility shows an obvious lack of change order control.

We found that DFCM paid for change orders which were either architect error, omissions or agency changes, all totaling over \$150,000. A change order attributed to an architect error is usually caused by a mistake made by the architect in preparing the design plans. Omissions are items typically left off the architect drawings and their inclusion in the project is considered to add value to the building. Agency scope changes are items requested and paid for by the agency. According to DFCM policy, when an architect makes an error, it is the responsibility of the architect to correct any such error and bear the costs associated with it. DFCM does pay for omissions, but according to policy should require the agency to pay for agency scope changes. In addition, DFCM has violated contingency fund policy by using the fund to pay for added changes requested by the agency. In our opinion, DFCM should better comply with these policies by holding architects and contractors more accountable for their performance and seeing that agencies justify and pay for their own additional requests.

With regard to the Box Elder Court Facility, we found that approximately \$94,000 or 3 percent of the total project budget was the result of architect error which DFCM ended up paying for rather than deducting from the architect's fee. For example, on one particular change order, the architect had failed to provide adequate walls and adequate ceiling space. As a result, the contractor requested a change order in the amount of \$10,278 to revise the ceiling placement and extend the walls. In addition, the fee included a charge for overtime so the work could be completed without extending the completion date of the project. This item, should have been corrected and paid for by the architect because it was a result of his error. However, because DFCM did not identify it as an architect error, the state, rather than the architect, paid for the change order. The only error we found that the architect paid for was the installation of stair plates to prevent cracking which cost \$1,395. We believe that DFCM needs to do more to identify architect error and hold the architect more responsible.

Omissions accounted for approximately \$173,000 or approximately 5 percent of the total project budget. Omissions again are items left off the drawings by the architect and contribute added value to the project for which DFCM pays. However, contractors collect an additional 15 percent for profit and overhead on omission type change orders. For example, we found that drinking fountains had been left off the original plans. As a result, the contractor charges an additional 15 percent over and above what it costs to install the fountains. On this particular building, DFCM paid the contractor over \$25,000 in overhead and profit simply because the architect forgot to add items that were needed. Granted, with the complexity of architectural drawings it would be virtually impossible to eliminate all omissions. In addition, we believe DFCM should pay for the omissions if they add value to the building. However, this project appeared to have a high amount of omissions compared to DFCM guidelines. The reason DFCM needs to control omissions is that when an omission is granted the contractor is not required to bid competitively and is paid an additional 15 percent in overhead. All of this results in a higher costing facility for the state. We believe DFCM needs to reduce the number of omissions by

holding the architect more responsible for their own drawings.

DFCM paid over \$56,000 out of the contingency fund for scope changes requested by the agency. According to DFCM policy, contingency money is not to be used to pay for agency requested scope changes. A scope change is where DFCM or the agency requests an item or an addition to the building. If the agency requests a scope change, they are responsible for the additional cost of that change. On this project alone, the courts requested a total of \$68,000 in scope related change orders, \$12,000 was paid for by the courts, leaving \$56,000 to be paid by DFCM through the contingency fund. For example, the courts requested additional power outlets and speaker wires in three of the court rooms. Although the agency requests appeared to be reasonable, we recommend that DFCM limit many of the agency scope changes unless payment is received by the agency, as stated in DFCM policy.

We also found that because of DFCM's lack of review, some change orders may have been over charged by the contractor. On one particular change order due to an omission, the contractor requested that sheetrock be installed in two elevator equipment rooms. The charge for this change order was \$5,860. When we called other contractors for a price quote, we were given a price one-tenth of what was charged on the change order. The DFCM project coordinator agrees the amount billed appears high and he is currently looking into it. In our opinion, DFCM needs to be more aware of the cost of change orders and be more involved in the inspection of construction costs.

During the course of the audit, DFCM officials reviewed the status of all change orders pertaining to the Box Elder Court Facility. According to DFCM, the architects had failed to categorize some of the original change orders correctly, making the totals reported above inaccurate. For example, DFCM reportedly found change orders which were originally categorized as scope changes that they now believe are omissions and vice versa. DFCM's revised totals are considerably different from the old ones provided to us during the audit. Some of the differences show scope changes originally reported at \$123,000 now reported at \$175,000 and omissions originally reported at \$173,000 now apparently \$210,000. However, the major difference shows architectural errors which were originally reported at \$94,000 now revised down to only \$885. This revised architectural error amount does not appear accurate since we know that the architect agreed to an error and paid for the installation of stair plates to prevent cracking at a cost of \$1,395. Due to the impending release of the audit we were unable to do additional work to determine which figures are correct. However, questions over proper change-order categorization only further demonstrates our concern over the lack of change-order management. In our opinion, had DFCM properly managed change orders to begin with, the change orders would have been categorized correctly and payment could have been made or denied accordingly. We recommend that DFCM use better controls in reviewing change orders and determine the proper category prior to making payment to the contractor.

DFCM officials are aware of our concern regarding change orders on this facility and are in the process of taking further action. A report card is being filled out on the architect and contractor, which lists the change orders in question and requires an explanation from both. We believe that action does need to be taken and that some money should be returned to the state. In our opinion, DFCM should take a more active role in justifying change orders before they are approved, rather than paying them and having to question or take action after the project is complete.

Prison Early Release Facility

In our opinion, the Prison Early Release facility also had a high number of change orders, over \$700,000 or close to 11 percent of the total cost. The reason this project had an unusually high amount of change orders was due to an oversight on DFCM's part. This facility was built as a design-build project, which means that DFCM is responsible for listing all exterior and interior components of the building in a request for proposal (**RFP**). On this particular project, the DFCM coordinator overlooked a number of necessary items that were needed in the facility. These items should have been listed on the RFP, as a result, they were handled as change orders later during construction.

Because DFCM failed to list all that was needed on the RFP, the facility cost a small amount more than it would have otherwise. Because the additions were made as change orders the contractor was rightfully entitled to 15 percent for profit and overhead. However, DFCM negotiated with the contractor concerning the change orders and as a result the contractor did not add an additional 15 percent for each change order that produced added value to the project or was not included in the RFP. For example, one of the items not included in the RFP was an access road and bridge located near the facility. DFCM believed that these items would be taken care of by the local city. However, the city felt they were not responsible for the access road or the bridge. As a result, DFCM considered the change an added value item and added it to the list of change orders. The contractor did not add an additional 15 percent overhead. In a few cases of added value items we found that the contractor did add overhead and profit to their cost, and in all cases that did not involve added value items, the full 15 percent was taken.

Out of approximately \$700,000 in change orders, \$505,000 were considered as added value items and only \$195,000 represented actual change orders to the building. If you were to consider only the actual change orders and not the added value items, the percent of change orders to total cost would be considerably less, approximately 3 percent which is standard. In addition, we found that the agency paid for approximately \$32,000 in requested change orders. Considering all of this, the project still remained within budget.

A prior performance audit dated October 1992, made DFCM aware of the need for better

controls over change orders. The audit listed examples where DFCM paid contractors for errors and omissions that were clearly the architects' fault. It also listed examples where contractors had overcharged the state for change-order work done during the course of the project. The audit recommended that DFCM hire an additional staff person to review requests for change orders and determine if labor costs are reasonable. DFCM was not funded an additional staff person, although they did assign an existing project coordinator the responsibility of reviewing change orders. However, last July as part of an office reorganization, this staff person was reassigned and no longer reviews change orders.

When we spoke with the employee who reviewed change orders, he remarked that many change orders have been denied through the review process, saving the state a considerable amount of money. In addition, he mentioned that a change order review was conducted on the Box Elder Courts building prior to his release and reassignment of duty. The employee recalled catching a number of change orders which were caused by architect errors and referring them back to the project coordinator for further review. However, according to DFCM records, those change orders that were sent back for further review were somehow authorized for payment to the contractor. In our opinion, DFCM needs a staff person devoted solely to the review of change orders. We believe that change-order review is a necessary process and that additional attention must be given after the change order has been denied to ensure that payment is not sent out by mistake.

Cost of Youth Corrections Facility May be Reduced

Our review of the Salt Lake Youth Correctional Facility project found that while DFCM exercised appropriate oversight over the planning process, further review could have resulted in additional construction cost savings. DFCM used a study funded by the Legislature to put together a proposal allowing the private sector to bid competitively on both the design and construction of the Youth Correctional Facility in Salt Lake County. The study appeared to have adequately addressed the facility needs in terms of square footage and operation. However, we believe DFCM failed to explore or suggest alternative methods of construction such as prefabrication which is used in other states. As a result, the state failed to save what manufacturers' claims to be as much as 25 percent of the cost of conventional construction and 20 percent in construction time. We believe that DFCM needs to study alternative methods of construction to determine if cost savings can be realized while still addressing such needs as safety and security.

During the 1994 legislative session, the Legislature funded the construction of one new youth detention facility, provided money for the design of another, and enacted intent language directing that the private sector be asked to design, build and operate a third facility for lease by

the state. This third facility is the Salt Lake County facility currently under construction. Unlike the traditional way of building a project where DFCM selects an architect and then accepts the lowest bidding contractor based on plans prepared by the architect, this project is being constructed through a means called design-build. Under the design-build approach, an architect and a contractor team together to bid on projects. The design-build method requires that the owner, DFCM, describe the project in terms of design objectives and minimal acceptable standards of construction and then solicits proposals from pre-qualified teams of architects and contractors to design and construct the project in the most efficient and economical way. The state in this particular case plans on leasing the building from Salt Lake County with the option to buy it at a future date.

The design-build concept has been used by DFCM for a number of years. However, lately the number of design-build projects has increased as per direction from the Legislature. DFCM likes the concept of design-build for certain projects and claims that design-build saves the state substantial time and money. A typical design-build project can save the state substantial time, which in turn saves money by avoiding inflation in construction costs. A drawback to the design-build approach is that it often costs the architect and engineer more money to put together a bid proposal. Architects and engineers often spend tens of thousands of their own dollars putting together proposals to bid on state projects with no guarantee that they will receive the work. However, the design-build concept allows private architects and engineers to work with contractors and possibly share the expense of bidding. With architects and contractors working together as teams, competition is enhanced and DFCM eliminates the contractor selection process. As a result, DFCM is able to build buildings faster, claiming substantial savings by avoiding inflation.

By using the design-build method, DFCM will build the Salt Lake Youth Correction Facility in less time than the traditional method would have taken. In addition, we believe that DFCM has done an appropriate job of overseeing the planning process. In the following section we will discuss the necessary program needs and square footage of the facility. We will also discuss, national programming standards and compare Utah's facility to other states.

DFCM Exercised Appropriate Planning Oversight

In our opinion, DFCM appears to have exercised appropriate oversight over the planning process for the youth correction facility. According to planning procedure, DFCM has put together an architectural program which analyzed the needs of the facility, justified the space required, and determined an estimated budget. The program was contracted out to a private architectural firm whose representatives met with DFCM and youth correction officials to determine program needs and alternatives. The program took into consideration local correctional standards, federal standards, as well as national standards from the American Correctional Association (ACA). These standards all give information and direction as to how a facility must be built. For example, according to ACA standard rooms are to be single occupancy and have a minimum of 80 square feet.

Standards also exist for the quality of building materials and furnishings that must be used. Due to the nature of some of the youth that will be housed in the facility, building materials must be of sufficient quality to resist destruction, breakage and possible escape. According to Youth Correction officials, security and public safety are the foremost concerns. DFCM developed minimum standards for the type and quality of materials that must be used. For example, walls must be made of a strong resilient type material rather than sheetrock found in most typical buildings. Also, taken into consideration by DFCM were the life-cycle maintenance costs of the materials.

Under **Utah Code** 62A-7-101, the Division of Youth Corrections is responsible for all youth offenders committed by the Juvenile Courts for supervision and treatment. In addition, the division has adopted standards with regard to the building of secure facilities. According to those requirements, youth corrections should provide a list of services that are needed for the humane care and rehabilitation of offenders such as, number of occupants per room, educational facilities, recreational facilities, medical facilities, etc.

In comparing the various standards to the architectural program, we found that the program in most cases followed the standards and in some cases it requested less. For example, the building is required by code to provide adequate space for health examinations and care within the facility. According to the program, Youth Corrections has requested one medical office totaling 80 square feet and one dental office totaling 100 square feet, and a joint medical office and records room totaling 160 square feet, which is consistent with standards. Another example shows where Youth Corrections and DFCM requested less than the standard called for. In the 1994 legislative session, legislators asked that youth corrections consider building facilities with at least some multiple-occupancy rooms, going against standard. According to the program, youth corrections not only came up with an option of double and triple occupancy rooms, but they also requested less square footage in single rooms than the standard called for. According to

the program youth corrections requested single rooms were to have a total of 65 square feet compared to the standard 80.

Compared to other states, Utah appears to have a facility that is constructed at a fairly low-cost. We contacted a few surrounding states in an attempt to compare costs associated with youth correctional facilities. Most other states are subject to the same standards as Utah, in terms of what type of facility must be constructed. For example, all states we contacted described having similar building designs in that they have only single occupancy rooms, classrooms, day rooms, medical facilities, and space for physical education and food services. We were not able to determine exactly how many square feet exist in each building for each state and the utilization of such space. However, using data from the few states that had built recently we took the total dollar cost of the building and divide it by the total capacity of youth housed to come up with an average cost per bed. According to the results Utah has one of the lowest costing facilities compared to some surrounding states.

Some of the reasons Utah may appear lower in cost per bed is that Utah has chosen to: (1) double and triple bunk some offenders, where as many of the other states have only single-occupancy rooms, (2) reduce the square footage of the single rooms where as most other states still remain at 80 square feet per room, and (3) build larger capacity facilities than most states, realizing greater economies of scale. In addition, construction costs vary from state to state, and from year to year.

In an attempt to lower costs, we examined the option of housing youth in a more "traditional" type adult facility. In a traditional adult facility a large number of offenders are bunked together in an open-type facility. However, youth correction officials have indicated that housing youth in an adult-type facility is not feasible due to safety and program issues. Although it may be cheaper, we also concur that housing youth in an adult-type facility is not practical nor functional. According to the 1974 Juvenile Justice and Delinquency Prevention Act, states are prohibited from the use of adult jails as youth housing alternatives. In addition, states are required by federal law to house pre-adjudicated offenders separate from post-adjudicated offenders. This would be difficult, if possible in an adult facility where larger populations are generally housed together.

Although adult jails may not be an option, we believe that alternative ways may exist for DFCM to save additional money on the construction of future youth correction buildings. Due to the construction progress that has already been made on the Salt Lake youth facility, it is not likely that additional cost savings can be realized on the construction of that facility. However, for future facilities we believe that savings are possible if DFCM were to look into alternative ways of construction. The following section shows possible savings through the use of prefabricated construction, which was never fully considered by DFCM.

Alternative Options May Result in Lower Building Costs

Although it appears that DFCM has put together a fairly cost-effective building, we believe that additional cost savings may have been possible had DFCM considered alternative options for construction. DFCM was approached by private independent contractors with the idea of using other methods of construction such as prefabrication to save the state both time and money. However, based on a DFCM project coordinator's past experience with prefabricated construction, the idea was discouraged. The project coordinator had apparently worked on projects using prefabricated construction years ago and reported numerous problems. However, in the past few years we have been told that prefabricated construction has made vast improvements and is now considered a viable means of construction by many professionals in the industry. Manufacturing reports indicate as much as 25 percent savings can be realized from construction and up to an additional 20 percent by avoiding construction inflation. In addition, other states who have built using prefabrication report favorable results along with considerable cost saving.

According to the manufacture, prefabricated modular steel cells are a proven, economical, durable and efficient way to build correction facilities. Typically used for adult facilities, these cells can easily be adapted to meet the needs of any youth correctional facility in the country. An independent study done by Kitchell Corporation in Phoenix, Arizona found the prefabricated cells to be one of the most permanent cost-effective methods of prison construction on the market. According to the study, these factory-built, fully-furnished cells will save money, time and extend the life of any facility. In addition to reported construction cost savings, the manufacture of prefabricated cells also claims additional life cycle savings. According to the manufacturer, an additional \$1,000 per cell per year can be saved in energy costs, painting, cleaning and sanitizing.

State officials in California who commissioned an independent study of prefabricated cells report, construction has proven to be economical, fast and secure. Other officials in New Jersey who have built using prefabricated cells report, the construction cost and time savings have been substantial. In addition, independent reports indicate that the quality of construction is good, with cells resisting scratching and impact. U.S. government officials from one of Idaho's Indian reservations constructed a number of prefabricated cells in 1991 to house both adults and youth. According to officials, the cells meet all ACA and Office of Juvenile Justice and Delinquency (OJJDP) standards for youth corrections and have no reported problems. As a result, Idaho's state youth corrections officials, who have only been given limited funding by their legislature, are in the process of considering the design of prefabricated cells because of the cost savings. Idaho's youth correction officials believe that prefabrication is an excellent alternative to the higher cost of conventional construction and according to their research,

prefabrication will meet all youth correctional standards, while giving them a secure and cost-effective facility.

DFCM has voiced some concerns regarding prefabricated cells. According to DFCM officials, some newer methods of prefabricated construction are not available in the state on a cost-effective basis, and it may not be cost effective to deliver another state's manufactured product to a Utah construction site. In addition, DFCM is concerned about such things as the noise factor, utility connections, and insulation. However, according to the manufacturer, noise has never been reported as a factor, each cell is self contained with flexible utility connections, and individual panels are 6 inches thick overall with an energy rating of R-16.

We believe that DFCM should explore all possible construction methods in determining which option is the most cost effective and is best suited for the state. In our opinion, prefabricated metal cell construction is an option that DFCM needs to consider and study further. We believe the potential for time and dollar savings on future correctional facility construction is substantial. However, due to the scope of this audit we were not able to review the concept of prefabricated construction in the depth that is needed. Therefore, we cannot say that it is the most effective means of construction for the state of Utah. However, we recommend that DFCM conduct a further in-depth review of the pros and cons of prefabricated construction before any decisions are made concerning its use. DFCM agrees that prefabricated construction is an option that needs to be considered. In addition, we recommend that DFCM continue to explore other more timely and cost-effective ways of doing construction.

Awarding of Contract Appears to be Fair and Unbiased

The last area we were asked to look at concerned the awarding of an architectural contract for the Department of Corrections. Questions exist as to whether the awarding of the Uintah-4 contract at the State Prison was fair and competitively procured. Questions also exist concerning a possible advantage given to the awarded firm by a relative who works at DFCM. Our review found that the project was competitively awarded and that there appears to be no conflict of interest associated with the contract.

A few years ago the Legislature approved a project to build correctional housing units at the Draper Complex. The original design, which was awarded competitively, was to be a prototype that could be used later for additional housing units. During the 1994 session, the Legislature approved an additional housing unit for the complex. The same design used in previous constructed housing units was approved for this new unit. Therefore, the former director went to the board with the recommendation that they appoint the original architect to design the new unit, in order to reduce costs. The board unanimously voted to appoint the same architectural firm

Representative Raymond Short
February 19, 1996
page 12

who had designed the prototype facility, which is consistent with DFCM policy and prototype design. The board also requested that the architect fee be reduced because of the prototype design. Instead of getting the full 5.81 percent of total budget, the architectural firm received 3.61 percent, a saving to the state of nearly \$150,000.

Our review also found no evidence indicating that the contract had been influenced by a relative who is a DFCM official. According to DFCM records, because of the relationship between one of the competing architectural firm and a DFCM staff member, the staff person in question was not involved in the selection process. In addition, we talked to other DFCM staff, who told us that the selection process was fair and that the person in question had no influence over the selection at all. In our opinion, the awarding of the Uintah-4 project appears to have been fair and justified according to DFCM policy.

Recommendations:

1. We recommend that DFCM establish and exercise better management controls over change orders.
2. We recommend that DFCM conduct an in-dept review of construction options pertaining to the states correctional facilities in determining which approach is most effective, economical and meets the needs of the state.

We hope this letter provides you with the information you need on this issue. If you have any further questions, please feel free to contact me.

Sincerely,

Wayne L. Welsh
Auditor General

WLW:RNO/lm